Snake River Fall Chinook Salmon ESU

Herb Pollard

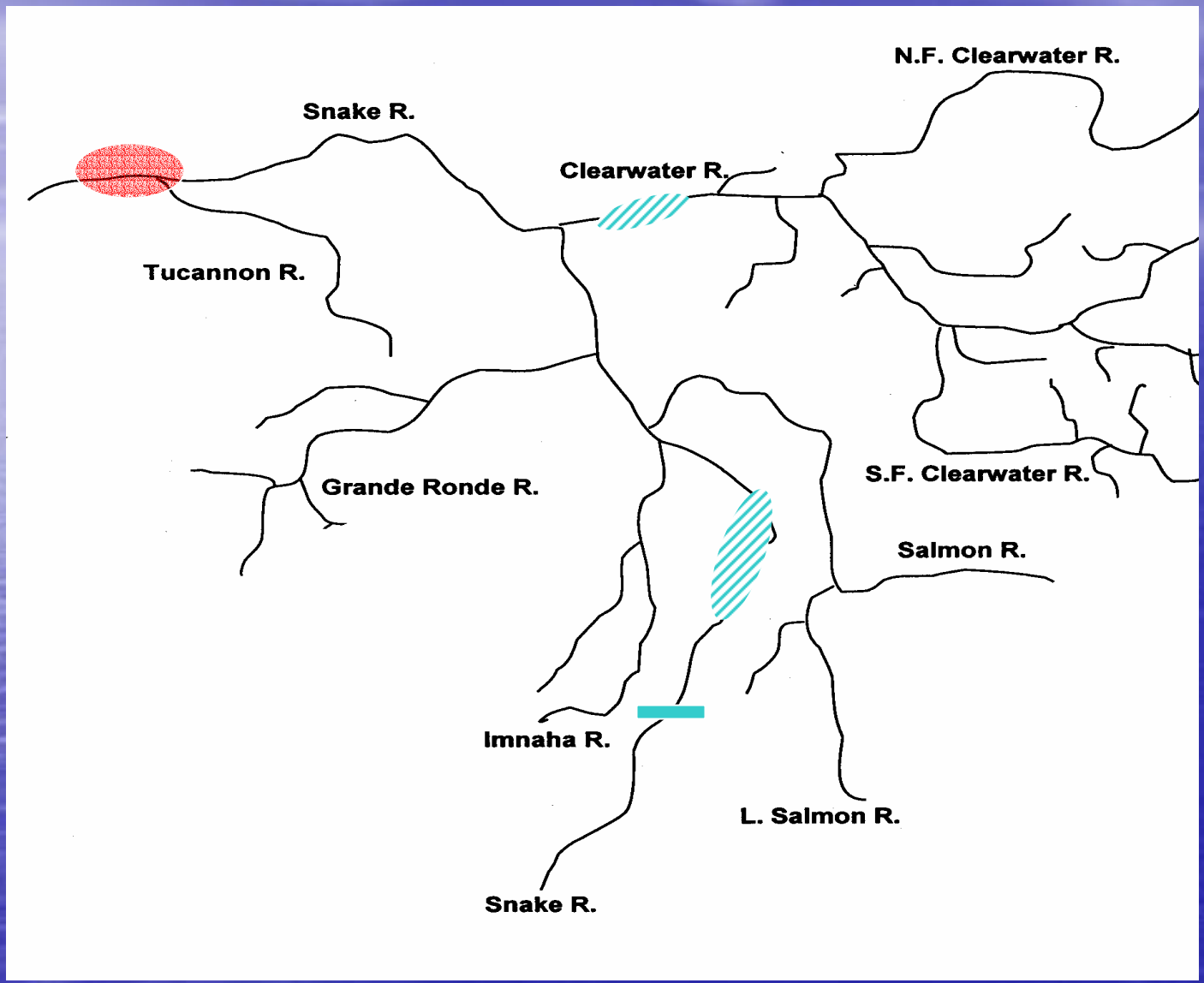
Summary

- There is a single population with hatchery and natural components in the Snake River Fall Chinook ESU
- The "Lyons Ferry Egg Bank" was founded in 1976 to help restore Snake River Fall Chinook
- When the SRFC population declined to fewer than 100 natural fish in the 1990s, the population was preserved in the Lyons Ferry Hatchery program
- In the past ten years, releases of Lyons Ferry smolts have produced increasing returns.

ESU Artificial Propagation Programs [all are Lyons Ferry in-ESU stock]

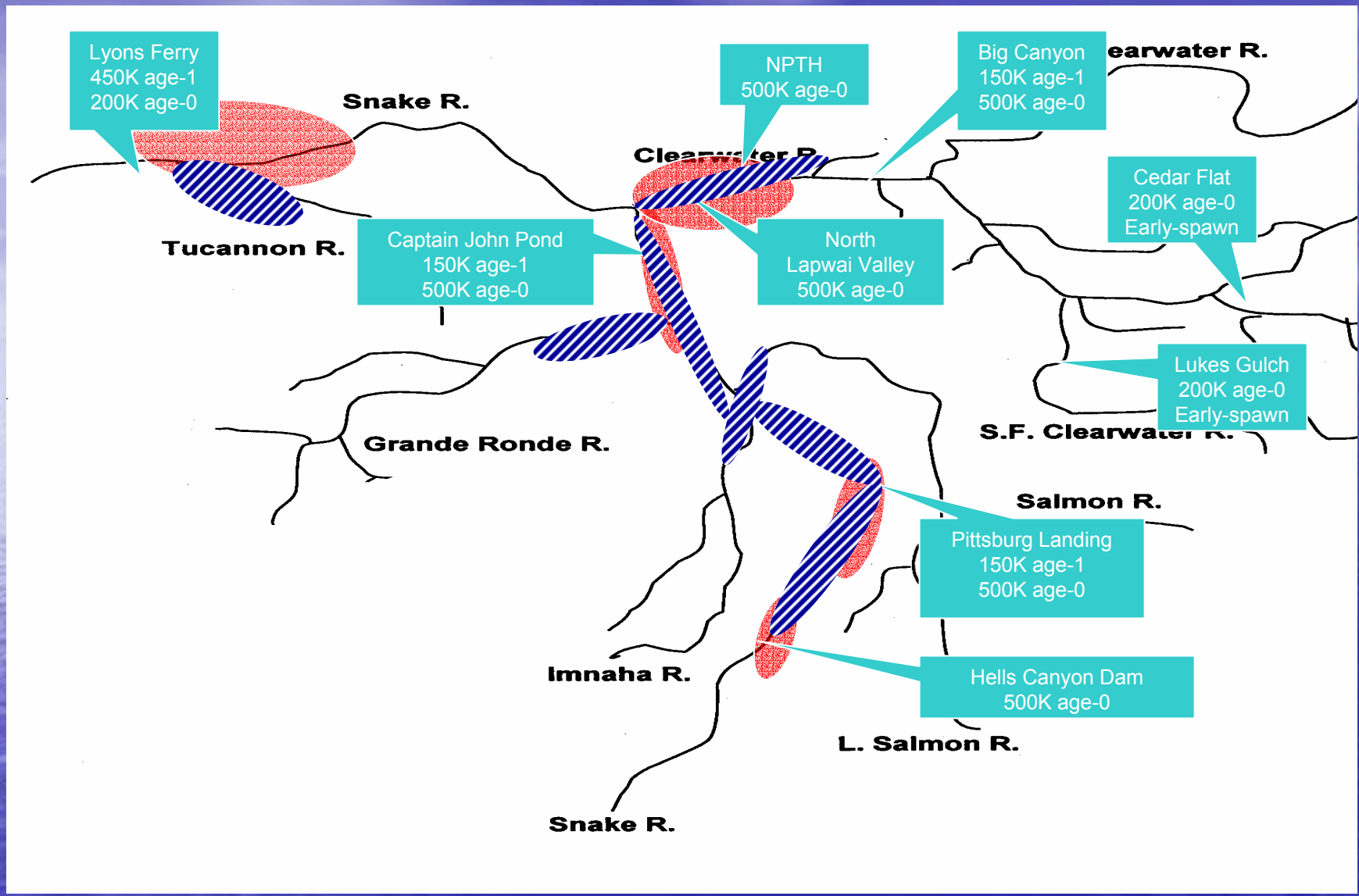
- Lyons Ferry Hatchery produces 900,000 age-1 and 1,900,000 million age-0 smolts
- Nez Perce Tribal Hatchery is programmed to produce 1,400,000 million age-0 smolts (production currently 300,000-500,000)
- Idaho Power Company's Oxbow Hatchery is programmed to produce 1,000,000 age-0 smolts (production currently 200,000-500,000)
- Total annual releases since 1997 has been about 900,000 yearling, 2,300,000 subyearling smolts

Snake River Fall Chinook Management – Prelisting



Lyons Ferry Program

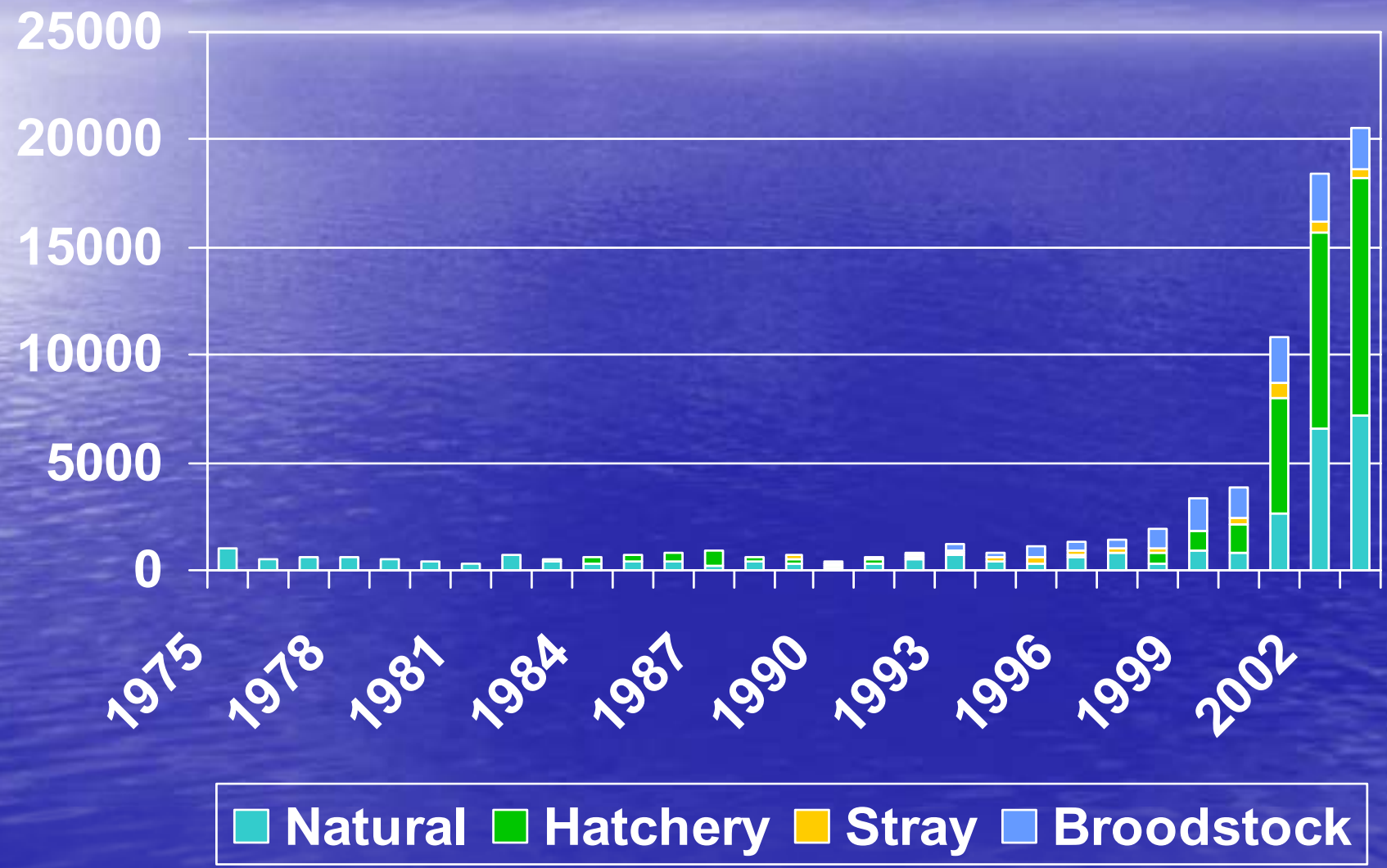
Natural Spawning



Snake River Fall Chinook Management – Present

- Lyons Ferry Program
- Natural Spawning

Snake River Fall Chinook ESU Abundance Trend (Lower Granite Dam counts)



Population Abundance Indicators

- Adult returns exceeded 12,000 fish and redd counts increased to 2,200 in 2003
- Currently planned production of Lyons Ferry stock is 5.2 million smolts
- Many of the spawners are F1 hatchery fish and the presence of many unmarked hatchery fish makes evaluation difficult

Hatchery Listing Policy

Effects of hatchery fish on the likelihood of extinction of an ESU, depend on how hatchery fish affect four key attributes.

Effects on Abundance of ESU

- The Lyons Ferry-based hatchery programs have contributed to a substantial increase in abundance of both the natural- origin and hatchery- origin components of this ESU

Effects on Productivity of ESU

- Effects of the propagation program on productivity are uncertain:
  - Large numbers of unmarked, F1 hatchery fish make evaluation of run composition and contribution to production difficult to evaluate
  - The increase in production has only occurred in the last few years, and the effect on productivity has not been evaluated

Effects on Diversity of ESU

- The Lyons Ferry Egg Bank preserved the genetic variability of this population when the natural component was severely depleted
- Returning large numbers of natural spawners to the wild has allowed some expression of the population's diversity in the form of local adaptation
- Future plans include development of early-spawning components adapted to the upper Clearwater River
- ESU-wide use of the single hatchery broodstock poses a risk of artificial selection and may delay adaptation to different habitat areas
- No natural fish have been incorporated in this broodstock since the 1980s due to concern for strays

Effects on Spatial Structure of ESU

- The distribution of natural spawners in the Snake River and larger tributaries has increased as abundance has increased
- Current plans include expansion of the range further up the Clearwater and into the Grande Ronde as hatchery operations reach programmed numbers

Net effect of Propagation Programs on the SRFC ESU

- Monitoring and evaluation to date indicate that the artificial propagation programs provide a substantial benefit
- However, the substantially increased abundance of this ESU has only occurred in past three years
- Important habitat and management issues such as Hells Canyon Dam relicenseing and developing a comprehensive plan among the co-managers remain unresolved

Effects of Artificial Propagation on VSP Attributes for Snake River Fall Chinook

Viability Criteria	BRT VSP Risk Score	Decreases Risk	Neutral or Uncertain	Increases Risk
Abundance	3.4	√		
Productivity	3.0		√	
Spatial Structure	3.6	√		
Diversity	3.5	√		

	Endangered	Threatened	Not Warranted
BRT Findings:	14%	61%	25%

Recommendation: No Change: Threatened

Snake River Fall Chinook ESU abundance Trend